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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/806,120 | 03/23/2004 | Tetsuo Yamada | 107317-00063 | 2119 |

7590 01/16/2009
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| EXAMINER |
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MISLEH, JUSTIN P

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| ART UNIT | PAPER NUMBER |
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2622

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| MAIL DATE | DELIVERY MODE |
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01/16/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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|------------------------------|--------------------------------------|---------------------------------------|--|
| Office Action Summary | Application No. 10/806,120 | Applicant(s) YAMADA, TETSUO | |
| | Examiner JUSTIN P. MISLEH | Art Unit 2622 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 November 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 20 is/are pending in the application.
- 4a) Of the above claim(s) 2 - 5 and 7 - 14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 6 and 15 - 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed March 19, 2008 have been fully considered but they are not persuasive.
2. Applicant argues, "In Mutoh, however, there is no additional charge-discharging circuit sets each formed next to each column of the vertical transfer devices at an end of each column of the vertical transfer devices near a horizontal charge transfer device, as recited in amended Claim 1 and similarly in amended Claim 6."
3. The Examiner respectfully disagrees with Applicant's position. In Mutoh, as shown in figures 2 and 3, there are a plurality of charge-discharging circuit sets (44 – see figure 2) each set being formed next to each column of the vertical transfer devices. Element 44 is a column/set of charge-discharging devices, that, as shown in figure 3, is formed adjacent to each vertical transfer column 37 at the end of column of the vertical transfer devices 37 near the horizontal charge transfer device 39. In Mutoh, each column 44 spans the width of each column 37. Column 37 has at least four ends, in two-dimensional space: an upper end, a lower end, a right end and a left end. As shown in figure 3, the lower ends of both columns 44 and 37 are near the horizontal transfer register 39. Therefore, the rejection will be maintained.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. **Claims 1, 6, and 15 – 18** are rejected under 35 U.S.C. 102(e) as being anticipated by Mutoh et al. (US 7,176,972 B2).

6. For **Claim 1**, Mutoh et al. disclose, as shown in figure 3, an electric charge transfer apparatus, comprising:

a plurality of columns of vertical charge transfer devices (37), each of which is formed adjacent to each column of a plurality of photoelectric conversion elements (elements 36 and 33 together form a column of photoelectric conversion elements. As shown in figure 3, each column 36/33 has a corresponding column 37) and transfers a signal electric charge (F2) converted by the photoelectric conversion element (36 and 33);

a plurality of charge-discharging circuit sets (44 – see figure 2) each [set] formed next to each column of the vertical transfer devices (44 is a column/set of charge-discharging devices, that, as shown in figure 3, are formed adjacent to each vertical transfer column 37) at an end of column of the vertical transfer devices (37) near an horizontal charge transfer device (39; each column 44 spans the width of each column 37. Column 37 has at least four ends, in two-dimensional space: an upper end, a lower end, a right end and a left end. As shown in figure 3, the lower ends of both columns 44 and 37 are near the horizontal transfer register 39), each charge-discharging circuit set (44) including at least two charge-discharging circuits (figure 2 shows at least four charge-discharging circuits – e.g., element 34 would encompass at least one of the charge-discharging circuits) connected in a serial manner for discharging the signal

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electric charge transferred by at least one of adjacent the adjoining vertical transfer devices (The charge at element 37a in the vertical charge transfer device 37 is discharged via discharge gate 45 and discharge drain 43 – there are a plurality of 37a elements, a plurality of discharge gates 45, and a plurality of discharge drains 43 connected serially along each vertical charge transfer device 37); and

the horizontal charge transfer device (39) being formed at a lower end of the columns of the vertical charge transfer devices and connected at one end thereof with an output circuit (41); and

wherein the output circuit (41) outputs the signal electric charge transferred by the vertical charge transfer devices (37) to an outside of the electric charge transfer apparatus.

7. As for **Claim 16**, Mutoh et al. disclose, as shown in figure 2, wherein the horizontal charge transfer device (39) receives the signal electric charge in parallel from the plurality of vertical charge transfer circuits (37) and transfers the received signal electric charge in sequence to the output circuit (41).

8. As for **Claim 17**, Mutoh et al. disclose, as shown in figure 3, wherein a first of the at least two charge-discharging circuits (figure 2 shows at least four charge-discharging circuits – e.g., element 34 is a charge-discharging circuit) selectively discharge (via gate 45) the signal electric charge from the plurality of vertical charge transfer devices (The charge at element 37a in the vertical charge transfer device 37 is discharged via discharge gate 45 and discharge drain 43 – there are a plurality of 37a elements, a plurality of discharge gates 45, and a plurality of discharge drains 43 connected serially along each vertical charge transfer device 37).

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9. As for **Claim 18**, on basis that residual charge will always be left in the plurality of vertical charge transfer devices (37), the Examiner submits that each of the charge-discharging circuits will discharge some charge leftover from some other charge-discharging circuit connected serially therewith. Therefore, Mutoh et al. disclose wherein a second of the at least two charge-discharging circuits discharges the signal electric charge left after the discharging of the first charge-discharging circuit.

10. As for **Claim 19**, on basis that residual charge will always be left in the plurality of vertical charge transfer devices (37), the Examiner submits that each of the charge-discharging circuits will discharge some charge leftover from some other charge-discharging circuit connected serially therewith. Therefore, Mutoh et al. disclose wherein a first of the at least two charge-discharging circuits discharges the signal electric charge converted by the photoelectric conversion element at a predetermined position and transferred by at least one of adjacent vertical transfer devices, and a second of the at least two charge-discharging circuit discharging the signal electric charge left by the first charge-discharging circuit.

11. For **Claim 6**, Mutoh et al. disclose, as shown in figure 3, a solid-state imaging device, comprising:

a semiconductor substrate (see figures 4 – 7);

a plurality of photoelectric conversion elements (36 and 33) formed on said semiconductor substrate;

a plurality of vertical charge transfer devices (37) formed above said semiconductor substrate, each of which is formed adjacent to each of the photoelectric conversion element (36

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and 33) and transfers signal electric charge (F2) photoelectric converted by the photoelectric conversion elements (36 and 33);

a plurality of charge-discharging circuit sets (44 – see figure 2) formed next to each vertical transfer device (44 is a column/set of charge-discharging devices, that, as shown in figure 3, are formed adjacent to each vertical transfer column 37) at an end of each of the vertical transfer device (37) near an horizontal charge transfer device (39; each column 44 spans the width of each column 37. Column 37 has at least four ends, in two-dimensional space: an upper end, a lower end, a right end and a left end. As shown in figure 3, the bottom end of both columns 44 and 37 are near the horizontal transfer register 39), each charge-discharging circuit set (44) including at least two charge-discharging circuits (figure 2 shows at least four charge-discharging circuits – e.g., element 34 would encompass at least one of the charge-discharging circuits) connected in a serial manner for discharging the signal electric charge transferred by at least one of adjacent the adjoining vertical transfer devices (The charge at element 37a in the vertical charge transfer device 37 is discharged via discharge gate 45 and discharge drain 43 – there are a plurality of 37a elements, a plurality of discharge gates 45, and a plurality of discharge drains 43 connected serially along each vertical charge transfer device 37); and

the horizontal charge transfer device (39) being formed at a lower end of the columns of the vertical charge transfer devices and connected at one end thereof with an output circuit (41); and

an output circuit (41) that outputs the signal electric charge transferred by the vertical charge transfer devices (37) to an outside of the electric charge transfer apparatus.

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12. As for **Claim 20**, on basis that residual charge will always be left in the plurality of vertical charge transfer devices (37), the Examiner submits that each of the charge-discharging circuits will discharge some charge leftover from some other charge-discharging circuit connected serially therewith. Therefore, Mutoh et al. disclose wherein a first of the at least two charge-discharging circuits discharges the signal electric charge converted by the photoelectric conversion element at a predetermined position and transferred by at least one of adjacent vertical transfer devices, and a second of the at least two charge-discharging circuit discharging the signal electric charge left by the first charge-discharging circuit.

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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14. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Justin P Misleh whose telephone number is 571.272.7313. The Examiner can normally be reached on Monday through Friday from 8:00 AM to 5:00 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, David Ometz can be reached on 571.272.7593. The fax phone number for the organization where this application or proceeding is assigned is 571.273.8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

**/Justin P. Misleh/
Primary Examiner
Group Art Unit 2622
January 16, 2009**